Lam, Alvin (DNRE)

From: Bill Stone [bstone@ectinc.com]
Sent: Monday, August 23, 2010 2:18 PM
To: Lam, Alvin (DNRE)
Cc: 'Gary L Kelterborn'
Subject: CMS Bay Harbor - Captur Tox Report
Attachments: GLEC Capture Report.pdf

Hi Alvin,

Attached is the full report from GLEC on the toxicity testing of Captur effluent and Captur effluent co-mingled with well water.

Let me know if you have any questions.

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August 4, 2010

Jeremy S. Lewandowski
Senior Engineer
Environmental Consulting & Technology, Inc. (ECT)
3622 Veterans Drive, Suite 2
Traverse City, MI 49684

RE: Acute and Chronic Toxicity Test Results for the ECT Bay Harbor Pilot Study Water Samples Collected on July 06, 2010

Dear Mr. Lewandowski:

Great Lakes Environmental Center, Inc. (GLEC) has completed our analyses of the 48-hour *Ceriodaphnia dubia,* 48-hour *Daphnia magna,* and 96-hour fathead minnow acute toxicity tests and the static renewal *Ceriodaphnia dubia* and fathead minnow chronic toxicity tests performed on each of the three Bay Harbor pilot study water samples; Capture 3-4/1, Capture 4-5/1, and Capture Effluent 2. The three samples were collected by ECT personnel on July 06, 2010 (GLC Number 8219, 8220, and 8221 (EEC 9094), respectively). Dilute mineral water (DMW) was used as dilution water for the *C. dubia* tests, and moderately hard reconstituted water (MH) was used as dilution water for the *D. magna* and fathead minnow tests.

These tests were conducted following the procedures outlined by EPA-821-R-02-012, *Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fifth Edition, EPA-821-R-02-013, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, Fourth Edition, and Great Lakes Environmental Center's Standard Operating Procedures.

Capture 3-4/1

The water sample Capture 3-4/1 (GLC Number: 8219) was not acutely toxic to *C. dubia, D. magna,* or fathead minnows. The acute 48-hour *C. dubia*, 48-hour *D. magna,* and 96-hour fathead minnow LC_{50} (Median Lethal Toxicant Concentration) estimates were all greater than 100 percent effluent, or 0 TU_a (acute toxic units).

However, the water sample Capture 3-4/1 was chronically toxic to both *C. dubia* and fathead minnows. The chronic NOEC (No-Observed-Effect-Concentration) for *C. dubia* reproduction was 50.0 percent of sample, or 1.0 TUc (chronic toxic units) and the NOEC for *C. dubia* survival was 100 percent of sample, or 0 TUc. The NOEC for fathead minnow growth and survival were both 12.5 percent of sample, or 5.7 TUc.

Capture 4-5/1

The water sample Capture 4-5/1 (GLC Number: 8220) was not acutely toxic to *C. dubia, D. magna,* or fathead minnows. The acute 48-hour *C. dubia*, 48-hour *D. magna,* and 96-hour fathead minnow LC_{50} estimates were all greater than 100 percent effluent, or 0 TU_a (acute toxic units).

However, the water sample Capture 4-5/1 was chronically toxic to both *C. dubia* and fathead minnows. The chronic NOEC for *C. dubia* reproduction was 50.0 percent of sample, or 1.4 TUc and the NOEC for *C. dubia* survival was 100 percent of sample, or 0 TUc. The NOEC for fathead minnow growth was 50 percent of sample, or 1.4 TU_c and the NOEC for fathead minnow survival was 25 percent of sample, or 2.8 TUc.

Capture Effluent 2

The water sample Capture Effluent 2 (GLC Number: 8221 and EEC Number: 9094) was acutely toxic to *C. dubia, D. magna,* and fathead minnows. The acute 48-hour *C. dubia* LC_{50} estimate was less than 6.25 percent of sample, or greater than 16.0 TU_a. The acute 48-hour *D. magna* LC_{50} estimate was 11.8 percent of sample, or 8.5 TU_a. The 48-hour fathead minnow LC_{50} estimate was less than 6.25 percent of sample, or greater than 16.0 TU_a.

The Capture Effluent 2 sample was also chronically toxic to both *C. dubia* and fathead minnows. The chronic NOEC for *C. dubia* reproduction and survival were both 6.25 percent of sample, or 11.3 TU_c and the NOEC for *C. dubia* survival was 100 percent effluent, or 0 TUc. The NOEC for fathead minnow growth and survival were both less than 6.25 percent of sample, or greater than 16.0 TUc.

Copies of the raw data sheets and standard reference toxicant data for the acute toxicity tests are included with this report in Appendices A and B, respectively.

If you have any questions or comments concerning the results of these toxicity tests, please contact either me or Dennis McCauley at (231) 941-2230. Thank you for the opportunity to provide this service to ECT, Inc. We look forward to receiving the next sample at your convenience.

Sincerely,

Mailee W. Garton

Mailee W. Garton
Laboratory Coordinator

MWG:mg
Enclosures